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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/696,030	10/26/2000	Toshiaki Okuno	50212-144	4360

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EXAMINER

SINGH, DALZID E

ART UNIT	PAPER NUMBER
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2633

DATE MAILED: 08/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/696,030	OKUNO, TOSHIAKI	
	Examiner	Art Unit	
	Dalzid Singh	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 October 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 October 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Optical Transmission System for Reducing Non-Linear Optical Phenomena Using Modulation Depth Control System.

2. The abstract of the disclosure is objected to because the abstract has exceeded 150 words. The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

As disclose in the specification and in claims 1 and 6, applicant recites, "the ratio of an amplitude modulation depth of amplified laser light outputted from the optical amplifier to an amplitude modulation depth of the laser light inputted into said optical amplifier, is set in the range of 60% or less." As shown in figures 5A or 5B, there is no structure of circuit diagram provided to teach a person of ordinary skill how the modulation depth is set or adjusted. Moreover, there is no structure of circuit diagram provided to teach how the signal is obtained from the output and input of the amplifier and how the obtained signal is measured and calculated in order to provide a proper modulation depth. Therefore, the specification fails to provide an enabling disclosure for claims 1 and 6.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts (US Patent No. 6,252,692).

Regarding claims 1 and 6 (as far as understood), Roberts discloses optical transmission system, as shown in Fig. 6, comprising:

a modulation signal source (1522) for outputting modulation signals of a predetermined frequency;

a semiconductor laser source (1510) driven by said modulation signals outputted from said modulation signal source to output laser light modulated according to said modulation signals (the laser source is driven by a tapped optical signal (tapped by 1530), which includes the modulation source signal); and,

an optical amplifier (2), shown in Fig. 2, for amplifying the laser light from the semiconductor laser source.

Roberts teaches adjustment of the modulation depth (see col. 8, lines 51-60), however, Roberts does not specifically disclose that the adjustment of the modulation depth to be in the range of 60% or less. However, Roberts clearly suggests that the modulation depth is adjustable. Based on this teaching, it would have been obvious to an artisan at the time of the invention to adjust the modulation depth in the range of 60% or less. Furthermore, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Swain et al.*, 33 CCPA (Patents) 1250, 156 F.2d 239, 70 USPQ 412; *Minnesota Mining and Mfg. Co. v. Coe*, 69 App D.C. 217, 99 F.2d 986, 38 USPQ 213; *Allen et al. v. Coe*, 77 App D.C. 324, 135 F.2d 11, 57 USPQ 136. In addition, discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. *In re Antonie*, 559 F.2d 239, 618, 195 USPQ 6 (CCPA 1977); *In re Aller*, 42 CCPA 824, 220 F.2d 454, 105 USPQ 233 (1955). See also *In re Aller*, 105 USPQ 233 (CCPA 1955) and *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Therefore, it would have been obvious to set the modulation depth to an optimum or workable value or range by routine experimentation.

Regarding claims 2, 7, 12 and 16, Roberts disclose optical transmission system as discussed above further comprising:

a signal source for outputting signals to be transmitted, in the form of an electric signal (1558); and

an external modulator (1524) which is provided on a transmission line between said semiconductor laser source and said optical amplifier (shown in Fig. 2), which amplitude-modulates the laser light outputted from the semiconductor laser source, based on the electric signals outputted from said signal source, and which outputs the amplitude-modulated laser light as light including signals to said optical amplifier.

Regarding claims 3 and 8, Roberts differs from these claims in that Roberts does not specifically disclose that the predetermined frequency is 20 kHz or less. However, since the operational frequency can be adjustable, therefore it would have been a matter of design choice to set the operating frequency in the range of 20 kHz or less. This supporting rationale is based on a recognition that the claimed differences exist not as a result of an attempt by applicant to solve a problem but merely amounts to selection of expedient known to the artisan of ordinary skill as design choice.

Regarding claims 4, 9, 13 and 14, Roberts shows the use of optical amplifier, as shown in Fig. 2, and differs from these claims in that Roberts does not specifically disclose that the optical amplifier comprises an erbium-doped optical fiber. However, in col. 1, lines 44-50, Roberts discloses a well-known usage of erbium-doped optical amplifier. Since erbium-doped optical amplifier is well known, therefore it would have been obvious to provide erbium-doped optical amplifier to the system of Roberts in

order to increase signal strength. The motivation of using erbium-doped optical amplifier is to reduce cost, since regenerative circuitries are not required.

Regarding claims 5, 10, 14 and 18, as shown in Fig. 3, Roberts shows optical communication system comprising the optical transmitter (1) further comprising:

an optical transmission line (shown by the arrow) through which light signals outputted from said optical transmitter propagates; and

an optical receiver for receiving said light signals having propagated through said optical transmission line.

Regarding claims 11 and 15, Roberts disclose optical transmission system, as shown in Fig. 6, comprising:

a semiconductor laser source (1510) driven by said modulation signals outputted from said modulation signal source to output laser light modulated according to said modulation signals (the laser source is driven by a tapped optical signal (tapped by 1530), which includes the modulation source signal); and

an optical amplifier (shown in Fig. 2) for amplifying the laser light from said semiconductor laser source.

Roberts teaches adjustment of the modulation depth (see col. 8, lines 51-60), however, Roberts does not specifically disclose that the adjustment of the modulation depth to be 10% or less. However, Roberts clearly suggests that the modulation depth is adjustable. Based on this teaching, it would have been obvious to an artisan at the time of the invention to adjust the modulation depth in the range of 60% or less.

Furthermore, where the general conditions of a claim are disclosed in the prior art, it is

not inventive to discover the optimum or workable ranges by routine experimentation.

In re Swain et al., 33 CCPA (Patents) 1250, 156 F.2d 239, 70 USPQ 412; Minnesota Mining and Mfg. Co. v. Coe, 69 App D.C. 217, 99 F.2d 986, 38 USPQ 213; Allen et al. v. Coe, 77 App D.C. 324, 135 F.2d 11, 57 USPQ 136. In addition, discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. *In re Antonie*, 559 F.2d 239, 618, 195 USPQ 6 (CCPA 1977); *In re Aller*, 42 CCPA 824, 220 F.2d 454, 105 USPQ 233 (1955). See also *In re Aller*, 105 USPQ 233 (CCPA 1955) and *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Therefore, it would have been obvious to set the modulation depth to an optimum or workable value or range by routine experimentation.

Furthermore, Roberts differs from these claims in that Roberts does not specifically disclose that the predetermined frequency not more than 20 kHz. However, since the operational frequency can be adjustable, therefore it would have been a matter of design choice to set the operating frequency not more than 20 kHz. This supporting rationale is based on a recognition that the claimed differences exist not as a result of an attempt by applicant to solve a problem but merely amounts to selection of expedient known to the artisan of ordinary skill as design choice.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Mussino et al (US Patent No. 5,812,297) is cited to show bias system in an optical CATV modulator.

Perino et al (US Patent No. 6,078,417) is cited to show spectral compaction via cross-modulation wavelength conversion.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalzid Singh whose telephone number is 703-306-5619. The examiner can normally be reached on Mon-Fri 8am - 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 703-305-4729. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

DS
August 22, 2003


JASON CHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600